Reprinted from AIAA JOURNAL, Vol. 11, No. 12, December 1973, pp 1791

Comment on "Rates of Change of Flutter Mach Number and Flutter Frequency"

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AND

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IN a recent technical note, Rao[1] published expressions for the rates of change of flutter Mach number and flutter frequency with respect to the structural design variables, and made reference to an earlier paper by Rudisill and Bhatia.[2] Rao has derived the expressions for the derivatives by separately considering the real and imaginary parts, and his procedure requires evaluation of the cofactors of the flutter determinant. It was shown in the paper by Rudisill and Bhatia that the two unknown derivatives which appear on differentiating the flutter equation can be determined by separating the real and imaginary parts of the differentiated equation, and their expressions require the eigenvectors only and not the cofactors. Therefore, the footnote in Rao's note referring to the paper by Rudisill and Bhatia should read "Their equation instead (not also) requires the eigenvectors of the flutter problem in order to compute $\partial V_f/\partial X_k$." Rao also states in the same footnote that they (Rudisill and Bhatia) have not used the expression to predict the flutter behavior at the perturbed design. In fact, Rudisill and Bhatia used the flutter velocity derivatives in their search scheme to compute the change in structural design variables necessary to obtain the desired flutter velocity. This is clearly stated in the text and illustrated in Fig. 3 of Ref. 2.

References

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Received February 7, 1973.
Index category: Optimal Structural Design, Aeroelasticity.

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